



1. (Three times amended) An isolated nucleic acid molecule consisting of a sequence selected from the group consisting of: (a) a sequence encoding an immunogenic polypeptide having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2); and (b) a sequence encoding an immunogenic polypeptide having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

2. (Four times amended) The nucleic acid molecule of claim 1 wherein said nucleic acid molecule encodes an immunogenic polypeptide having a sequence with at least 90% sequence identity to the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

3. (Three times amended) The nucleic acid molecule of claim 1 wherein said nucleic acid molecule encodes an immunogenic polypeptide having a sequence with at least 90% sequence identity to the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

4. (Three times amended) A recombinant vector comprising:  
(a) a nucleic acid molecule encoding an immunogenic polypeptide comprising a sequence selected from the group consisting of: (i) a sequence having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2); and (ii) a sequence having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2); and

(b) control elements that are operably linked to said nucleic acid molecule whereby said coding sequence can be transcribed and translated in a host cell, and at least one of said control elements is heterologous to said coding sequence.

5. (Three times amended) A recombinant vector according to claim 4, wherein said nucleic acid molecule encodes an immunogenic polypeptide which comprises a sequence having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

6. (Three times amended) A recombinant vector according to claim 4, wherein said nucleic acid molecule encodes an immunogenic polypeptide which comprises a sequence having at least 90% sequence identity to the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

7. A host cell transformed with the recombinant vector of claim 4.

8. A host cell transformed with the recombinant vector of claim 5.

9. A host cell transformed with the recombinant vector of claim 6.

10. A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 7; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.

11. A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 8; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.

12. A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 9; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.

44. (New) An isolated nucleic acid molecule comprising a sequence selected from the group consisting of: (a) a sequence encoding the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2); and (b) a sequence encoding the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

45. (New) The nucleic acid molecule of claim 44 wherein said sequence encodes the contiguous amino acid sequence shown at positions 1 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

46. (New) The nucleic acid molecule of claim 44 wherein said sequence encodes the contiguous amino acid sequence shown at positions 29 through 256, inclusive, of Figures 4A-4C (SEQ ID NO:2).

47. (New) A recombinant vector comprising:

- (a) a nucleic acid molecule according to claim 44; and
- (b) control elements that are operably linked to said nucleic acid molecule whereby said coding sequence can be transcribed and translated in a host cell, and at least one of said control elements is heterologous to said coding sequence.

48. (New) A recombinant vector comprising:

- (a) a nucleic acid molecule according to claim 45; and
- (b) control elements that are operably linked to said nucleic acid molecule whereby said coding sequence can be transcribed and translated in a host cell, and at least one of said control elements is heterologous to said coding sequence.

49. (New) A recombinant vector comprising:

- (a) a nucleic acid molecule according to claim 46; and
- (b) control elements that are operably linked to said nucleic acid molecule whereby said

coding sequence can be transcribed and translated in a host cell, and at least one of said control elements is heterologous to said coding sequence.

50. (New) A host cell transformed with the recombinant vector of claim 47.

51. (New) A host cell transformed with the recombinant vector of claim 48.

52. (New) A host cell transformed with the recombinant vector of claim 49.

53. (New) A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 50; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.

54. (New) A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 51; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.

55. (New) A method of producing a recombinant CAMP factor comprising:

(a) providing a population of host cells according to claim 52; and

(b) culturing said population of cells under conditions whereby the CAMP factor encoded by the coding sequence present in said recombinant vector is expressed.